4136534

PRELIMINARY ASSESSMENT
OF
PROTO CIRCUITS INC.
ROCKVILLE, MARYLAND

(MD-399)

FEBRUARY, 1992

US EPA, Region III
Reviewed and Approved

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1.0 INTRODUCTION

1.1 AUTHORIZATION

The Maryland Department of the Environment, Hazardous and Solid Waste Management Administration (MDE/HSWMA) performed this study under Cooperative Agreement #V-003577-01-0 with the U.S. Environmental Protection Agency (USEPA) Region III.

1.2 SCOPE OF WORK

The MDE/HSWMA was contracted to conduct a Preliminary Assessment (PA) of the Proto Circuits Inc. site (MD-399). The potential for the release of hazardous waste from the site via groundwater, surface water, soil exposure, and air pathway is evaluated. The population and sensitive environments which potentially may be impacted are then discussed.

1.3 EXECUTIVE SUMMARY

At 2045 hours on April 5, 1986, the Rockville Volunteer Fire Department received an alarm of fire call to Proto Circuits Inc. 14674 Southlawn Lane, Rockville, Maryland 20850. The fire was the result of heaters on the process electroplating tanks overheating and the safety checks not cutting off. The fire was under control in approximately thirty minutes. Water was used to extinguish the fire.

The location of the fire was in Bay C of the electroplating room. The fire melted ten process fiberglass 30 gallon tanks used for copper plating and caused spillage of eight of the 30 gallon tanks, the other two tanks were empty. One of the tanks contained Ronacat Multilayer Pre-Activator; one tank contained Ronacat Neutralizer Salt, and the six remaining tanks were for rinsing and contained water.

Paul Thompsom from the Maryland Department of the Environment, Hazardous and Solid Waste Management Administration (MDE/HSWMA) responded to the scene at 0055 hours on April 6, 1991. Inspection of Bay C revealed one inch of liquid, blue/green in color, covering most of the concrete floor. The floor is sloped to drain towards the sump pump in the adjacent room, Bay D, which contains the facilities pre-treatment system. The pre-treatment room also contained approximately one inch of blue/green liquid on the concrete floor.

There was some runoff from the fire fighting, however it appeared to the MDE inspector that a majority of the spill was contained within the building. The facility was on a private sewer system, Washington Suburban Sanitation Commission (WSSC). Also, they have their own wastewater pre-treatment system. Some of the runoff went into the drain located outside the building approximately ten feet in front of Bay D. The drain is part of WSSC's sewer lines. Some runoff possibly went into the storm

drains, which are located behind the building to the asphalt parking lot, downslope approximately 300 feet northwest of the site.

The facility had extra empty drums for holding wastes for containment, and one completely empty 2500 gallon tank, which were utilized to hold the cleaned up spilled liquid until it could be properly treated. The liquid was treated through their pre-treatment system. The initial clean-up time frame was two weeks. According to MDE records, pH sampling was done at the site, but a search of current files did not reveal any sample results.

The site is in an industrial park, in the 14000 block of Southlawn Lane, Rockville, Maryland 20850. Proto Circuits Inc. occupies the entire 12,000 sq. ft. building, which consists of nine separate bays. Private wells in the area serve approximately 1545 persons living within four miles from the site. There are no municipal well systems within four miles from site; also, there are no surface water intakes within 15 miles downstream from site.

2.0 SITE DESCRIPTION

The Proto Circuit Inc. site is located in the center of Beantown Industrial Park at 14674 Southlawn Lane, Rockville, Montgomery County, Maryland 20850. The international coordinates of the site are 39°5'40" north latitude and 77°7'55" west longtitude. The site is located on the Rockville, Quadrangle, Md. 7.5 minute topographic map.[1] The Maryland grid coordinates of the site are 460000 N. by 760000 E.

The site may be reached from Baltimore by proceeding south on I-95 towards Washington D.C. for approximately 27 miles to I-495. Proceed west on I-495 for approximately 11 miles to exit 34, onto Maryland Highway 355. Proceed north on Md. 355 approximately 5 miles to Norbeck Rd. (Rte 28). Make a right on Norbeck Rd. proceeding east 1.5 miles to Gude Rd. Make a left on Gude Rd. and proceed north approximately 0.75 miles to Southlawn Lane. Make a left on Southlawn Lane and proceed west two blocks to 14674 Southlawn Rd. which is on the right side of the road and in the center of the Beantown Industrial Park (Figures 1 & 3).

The site is in the Beantown Industrial Park and occupies the entire 12,000 sq. ft. building, consisting of nine separate bays. One bay is utilized as an office and the others are used for the electroplating process. All of the bays have front overhead garage doors, except for the office section (Figure 4). Proto Circuits

Inc. is an active facility and manufactures blank printing circuits. The circuits are electroplated with copper, lead, tin, and gold. Special ordered circuit boards are coated with black oxide, which is applied only to multi-layer boards. Components are assembled on fiberglass material boards. The company has been in operation at the same location since 1973 and has a USEPA ID Number of MDD064846959 for a Generators/TSD Facilities.

The site is in an industrial park, comprised of 8.90 acres, in the center of approximately 13 warehouses, buildings, offices, etc. The surface area is asphalt paved and slopes northwest towards the rear of the site and empties into storm drains approximately 300 feet from the site building. Adjacent to the parking lot is a field with a ditch which empties into a storm drain, then crosses under Dover Road and empties into a pond adjacent to the road. The ditch was dry and overgrown with vegetation when the site visit was conducted (Section 6). There were no signs of stressed vegetation. The runoff from the site does not go into the ditch because of the curb containment.

2.1 SITE OWNERSHIP AND SITE USE

Proto Circuits Inc. has been located in the Beantown Industrial Park since 1973, when the park was constructed. Before the development of the property into an industrial park, it is believed the area was unused open land.[2]

Proto Circuits Inc. has leased the building from the owners since 1973. The owner of the industrial park is Frederick Business Properties Co.,10209 Sorrell Ave., Potomac, Maryland 20854, a Maryland based corporation. The president of the company is Mr Farid Srour, same address.

On Dec. 22, 1972 Frederick Business Properties Co. merged with County Properies Inc.. County Properties Inc. purchased the property on August 27, 1973 from James H. Grove Jr. and his wife Virginia H. Grove (Liber 1852 Folio 111).[3]

On June 8, 1950 James H. Grove and his wife Virginia purchased the property from Erven W. Butt (C.K.W. Liber 1389 Folio 366).[3]

Proto Circuits Inc. is in a 8.90 acre industrial park. They occupy the entire 12,000 sq. ft. building consisting of nine separate bays. Currently, the company is active and manufactures blank printing circuits.

On April 5, 1986, Proto Circuits Inc. had a fire incident involving a melt-down and spillage of eight 30 gallon tanks. Most of the spillage was contained inside the building, except for some runoff from the fire fighting, which flowed into the outside storm drains. The spillage from the tanks consisted of copper plating glycols, sodium hydroxide, and rinse water.

2.2 PERMIT AND REGULATORY ACTIONS

In 1984, John H. Kershner, Inspector for the Department of Health and Mental Hygiene, Office of Environmental Programs, inspected the facility as generators of hazardous waste. His inspection revealed that two 55 gallon drums were partially filled with waste sludge from the filter press with no hazardous waste identifying labels. Thirteen 55 gallon drums without labels were observed in the reflow and storage room. An appreciable amount of spilled solution was observed on the floor of the plating room, Bay C. The company was advised by the inspector that all drums must be properly labeled at the time that the first amount of hazardous waste is placed in the drum. As there were no drains in the plating room, the floor was cleaned by vacuuming.

All spent solvents, treatment components, and sludge generated by this facility were manifested out as waste with the exception of silver, which was separated out by a Rolex silver recovery unit. The hazardous waste was manifested out through SCA Services, Rt.1, Box 255, Pinewwod, North Carolina 29125, USEPA # SCD 070375985. Maryland's USEPA Generator/Treatment Storage and Disposal (TSD) facilities ID Number is MDD 064846959. The pre-treated wastewater effluent is discharged into Washington Suburban Sanitary Commission (WSSC) sewer system. Proto Circuits Inc. discharge permit is number 00470.

2.2 REMEDIAL ACTIONS

After the fire, Proto Circuits Inc. cleaned up the spill by placing the liquid into empty containers. The liquid was then treated through their pre-treament system. The spent solvents, treatment components, and sludge were transferred from the site under hazardous waste manifests. The waste was manifested out through SCA Services, Rt 1, Box 255, Pinewood, South Carolina 29125, USEPA # SCD 070375985. The wastewater was pre-treated and discharged into WSSC's sewer lines.

In 1984 an inspector for Mental Health and Hygiene cited the facility for not having hazardous labels affixed to fifteen 55-gallon drums of waste. Also, the company was directed to clean up the floor in Bay C of an appreciable amount of solvent. The reports show that the floor was vacuumed and labels were affixed. There were no other reports of remedial action taken to date.

3.0 WASTE DESCRIPTION

During the fire one 30 gallon tank of Ronacat Multilayer Pre-Activator melted down and one 30 gallon tank of Ronacat Neutralizer Salt spilled its contents on the floor. Also six 30 gallon tanks of rinse water spilled on the floor. The constituent of Ronocat Multilayer Pre-Activator is Glycols and Sodium Hydroxide. Ronocat Neutralizer Salt is a trade secret.[2] It is an organic salt compound used to strip the blue layer off the pc boards. The waste stream was treated in the companies pre-treatment system.[2]

Presently Proto Circuits Inc. wasteswater is discharged to the subject facilities pretreatment system. Approximately 8100 gallons of water per day is used in rinsing and the make up of process solutions. Water and discharge from the pre-treated effluent is provided by WSSC.[2] The discharge permit for WSSC and Proto Circuits Inc. is 00470.

Based on the facilities inspection and review of the current subject facilities files, it was found that wastestreams are generated in the form of electroplating sludge from the pre-treatment system. This sludge is designated as F006 and consists of copper hydroxide, nickel hydroxide, calcium hydroxide, and diatomaceous earth. Spent potassium permanganate solution (D002) is used in the electroles copper line. This chemical is used to remove epoxy resin smear from the holes of circuit boards. Spent

acidic and alkaline cleaners are treated in the facilities pre-treatment system. The hazardous waste sludge is manifested out to a certified hazardous waste hauler and then to a permitted facility.[2] The wastewater is pre-treated, monitored and sampled, and the effluent is discharged into WSSC's sewer lines.

4.0 SPECIAL CHARACTERISTICS

The average annual precipitation for the site area is approximately 40 inches and the mean annual lake evaporation is about 34 inches.[4] The average annual net precipitation is therefore 6 inches. The 2 year/24 hour rainfall is approximately 3.4 inches.[5]

The entire site is covered by concrete and asphalt. The parking lots are curbed and all runoff is contained and diverted to storm drains. These storm drains divert runoff from the site to the large pond located northwest of the site (Figure 3). These storm drains represent the probable point of entry (ppe) of runoff from the site into the surface water pathway.

Soils beneath the site belong primarily to the Glenville Series, and are composed of silty loam with slopes varying from 3-8%[7]. The Glenville Series soils are deep moderately well-drained and have distinct fragipans, or siltpans, in the subsoil. These soils develop primarily on weathered mica schist, phyllite, and some gneiss rocks. The surface soil layer contains mostly fine sediment washed in from the topographically higher Manor, Chester, Glenelg, and other associated soils. The Glenville soils occur on upland flats and in topographically low areas throughout the Piedmont Province, generally in the headward regions and upper courses of intermittent drainage ways.

The surface soil layer (A-Horizon) contains up to 5 inches of olive-brown silt loam with fine subangular blocky structure and many fine roots. The boundary between the A and B-Horizons is abrupt and relatively smooth. The A-Horizon is very strongly acidic (pH ranges from 4.5 - 5.5).

The subsoil B-Horizon contains a 5-15 inch thick upper layer of yellowish-brown, heavy silt loam with a coarse, subangular, blocky texture and many fine rootlets in the upper part. From 15 to 22 inches, the heavy silt loam contains dark brown and light yellowish-brown color mottling. This layer is firm and brittle when moist and displays a gradual smooth boundary with the underlying layer. From 22 to 28 inches, the soil changes to a light yellowish-brown silt loam with abundant distinct dark brown color mottling. The structure is fine subangular blocky and the texture is firm and brittle when wet. There is an abrupt smooth boundary with the underlying layer. From 28 to 42 inches the soil is silt loam with distinct mottles of strong brown, pale olive, and black. The structure is coarse subangular blocky, with a friable texture when moist. This layer is micaceous, with some discontinuous clayskins and some thin fragipan layers.

The entire Glenville soil profile is very strongly acidic. These soils have a relatively low infiltration rate due to the fragipan in the subsoil. Hydraulic conductivities range from 10^{-4} to 10^{-5} cm/sec. Some low areas are temporarily ponded after heavy rains or quick thaws.

4.1 GROUNDWATER AND GEOLOGY CONSIDERATIONS

The site is situated in the east-central portion of the Piedmont physiographic province, approximately 12 miles west of the Fall Line. The Piedmont Province is composed of igneous and sedimentary rocks which have been tightly folded, intruded by granitic and mafic igneous rocks, and metamorphosed during the Appalalchian Orogeny. These rocks have subsequently been uplifted and truncated by erosion to their present state. The regional structural lineation and fold axes trend in a north-south direction in this area of the Piedmont. The strata are steeply inclined, with dips ranging from 70° to 90°.[8]

Crystalline rocks which comprise the Piedmont Province have been exposed at the surface for many millions of years. The upper portion of these exposed rocks has been subjected to physical and chemical weathering processes which have produced a soil-like alteration product called saprolite. Essentially all exposed crystalline rocks in the Piedmont are covered by a mantle of saprolite which varies from 5 to 100 feet in thickness. The saprolite retains some properties of the original parent rock (bedding fractures, schistocity, foliation, etc.). Many of the more soluble chemical constituents in the original rock have leached out or have been altered by groundwater, however, to produce a material which is similar to soil in texture and consistency. The intensity of this weathering process generally

decreases with depth and the saprolite grades into unaltered bedrock. The weathering process is accelerated in fractures, bedding planes, joints, etc. where the groundwater moves freely through the rock. Saprolite zones are thickest in topographically high areas and in any rock which is intensely fractured. Saprolite zones will thicken and thin locally in direct response to the presence of fractures.

Saprolites are excellent aquifers. The primary factors which determine the efficiency of a saprolite aquifer are: original parent rock type, degree of fracturing of parent rock, thickness, topographic position. Saprolites also function as storage reservoirs for groundwater which may be transmitted to the deeper unaltered crystalline bedrock aquifers through fractures. The permeability within these bedrock aquifers occurs almost exclusively along fractures, bedding planes, and regional joint systems. These features are the conduits for groundwater infiltration from the saprolite to the unaltered crystalline bedrock aquifers below.

In the vicinity of the site, the Wissahickon Formation is the crystalline bedrock aquifer beneath the soil profile and saprolite zone. The Wissahickon Formation is composed of banded to laminated, quartz-rich phyllites and schists with accessory magnitite and garnets. Metamorphosed sandstone and conglomerate beds containing muscovite, chlorite, albite, and quartz are

interbedded throughout, but are more common in the upper half of the stratigraphic section. Amphibole, commonly with accessory epidote, occurs as concordant layers ranging in thickness from 4 inches to over 75 feet. The amphibole comprises less than 1% of the total stratigraphic section in the Wissahickon, which is estimated to be 14,000 feet or more in thickness. This stratigraphic section has also been referred to as the "Upper Pelitic Schist" facies of the Wissahickon Group and the "Albite Facies" of the Wissahickon Formation.

The contact between the Wissahickon and the Sykesville Formation occurs approximately one mile east of the site (Figure 6). The Sykesville Formation consists of poorly-foliated to massive, medium grained, biotite-plagioclase -quartz gneiss, which looks deceptively like granite in appearance. The gneiss contains numerous clasts ranging in size from granules to cobbles and some larger slabs. The clasts are composed of chloritized biotite schist, quartz pebbles and granules, and quartzo-feldspathic rock fragments. This formation has been referred to as the Boulder Gneiss. The Sykesville Formation also contains an intensely foliated schist member which is finer-grained than the boulder gneiss. The schist member is locally devoid of clasts, commonly garnetiferous, and contains abundant muscovite.

Within the Sykesville Formation local exposures of Basic igneous rocks occur in a north-south alignment, which may represent

the trace of a fault or major fracture zone (Figure 5). There is no Karst terrain within a four-mile radius of the site.

Domestic wells in the vicinity of the site range from 70 to 340 feet in depth. These wells tap bedrock aquifers which produce from fractures in the Wissahickon or Sykesville Formation. The nearest well is (b) (9), (b) (6) [redacted].[9] The static water level in this well is 40 feet and the pumping rate during the flow test was 10 gallons per minute (gpm). This well draws from the Wissahickon Formation and was completed open hole from 40 to 120 feet, with 4 inch casing through the saprolite to the top of the bedrock at 40 feet. No domestic wells could be located within a one mile radius of the site. The site location is in an area outside of the 500 year flood plain.[10]

4.2 SURFACE WATER CONSIDERATIONS

The surface of the site area is entirely concrete and asphalt. It downslopes in a northwest direction in the front and rear of the site building, to a rear asphalt parking lot. Approximately 300 feet northwest from the site, the runoff flows into storm drains at the edge of the rear parking lot. There is a concrete curb containment at the edge of the parking lot separating the parking lot from the open field.

Water flows from the storm drain into an impoundment approximately 700 feet northwest of the site, across New Dover Rd. (Figure 3). This surface water impoundment is a regional storm water pond.[15] The pond is approximately 1/4 acres in size and is approximately 20 feet below the road surface. The runoff from the storm drains empty into this pond. The flow rate of the runoff through the storm drain is estimated to be less than 10 cubic feet per second (cfs).

Surface water runoff from the pond enters a storm drain located north of the pond and empties into an intermittent stream above ground approximately 2000 feet north of the site, after crossing under Gude Rd. The flow rate of this stream is estimated to be less than 10 cfs at this juncture. Approximately 3200 feet from the site this intermittent stream flows into a perennial unnamed stream, which is the probable point of entry (ppe).[11]

From the perennial stream, the drainage flows east and approximately 0.70 stream miles from ppe empties into Rock Creek, which is protected for recreational use and aquatic life.[12] Rock Creek is a small to moderate stream wtih a flow rate estimated to be 10-100 cfs. Rock Creek flows south through Rock Creek Regional Park, which is a Montgomery County owned park used mainly for recreational purposes.[13] Rock Creek continues southward and approximately 15 stream miles downstream crosses the Montgomery County and Washington D.C. boundary. Eventually, after flowing

through Washington D.C., Rock Creek empties into the Potomac River.

No signs of stressed vegetation was observed during the site visit conducted in October 1991 (Section 6).

There are no surface water intakes within 15 miles downstream from site. WSSC obtains its water exclusively from two surface water intakes, which are not along the surface water pathway associated with this site. The first intake is located (b) (9) [redacted]. This intake is approximately seven miles southwest of the site. A second intake is located at (b) (9) [redacted]. This impoundment is situated upgradient from the site; consequently there is no potential for discharge from the site to Rocky Gorge Reservoir.[15]

The city of Rockville Water Department supplies only the city of Rockville with potable water. Supplies are obtained exclusively from one surface water intake located on the [redacted]e. This intake, which also receives no drainage from the site, is located approximately (b) (9) [redacted] miles southwest of the site. The city of Rockville Water Department services an estimated 40,000 people.[15]

4.3 SOIL ACCESSIBILITY CONSIDERATION

The entire site surface is concrete and asphalt. The site building is one of 13 warehouse-type buildings in the industrial park. There are 26 people employed at Proto Circuits Inc., all of whom work an average of 40 hours a week on site. There are no residences, schools, or day care centers within 200 feet of the site. There are no terrestrial sensitive environments within a four mile radius of the site.

The site building itself is secured at night. The industrial park does not have any fences, gates, or posted "no trespassing" signs.

4.4 NEARBY LAND USE CONSIDERATIONS

The nearest occupied residence is on Dover Road approximately 1,000 feet southwest of the site. The area surrounding the site is commercial, consisting of warehouses, offices, a hardware distributor, and one restaurant, which is northeast of the site building approximately 300 feet. North of the site, across Gude Rd., approximately 1.30 miles from site is a natural gas storage area. No odors or circumstantial evidence of an air release were observed during the site visit conducted for this report in October 1991 (Section 6).

5.0 POPULATION DESCRIPTION

5.1 GROUNDWATER POPULATION

Proto Circuits Inc, receives water from the city of Rockville's surface water intake. The majority of residents living within four miles of the site are served from WSSC. A total of approximatley 1545 persons depend upon ground water drawn within four miles of the site. This estimate is based upon USGS topographic mapping of the area and residential sanitation well logs.[1&16] An average of 2.7 persons per household for Montgomery County was used. This population is distributed as follows:[17]

Distance of Ring from the site	Population Served By: Private Wells	Municipal System	Ring Total
0 - 1/4	-	-	0
1/4 - 1/2	-	-	0
1/2 - 1	0	-	0
1 - 2	122	-	122
2 - 3	365	-	365
3 - 4	1058	-	1058
Totals	1545	-	1545

There are no municipal wells within a four mile radius of the site. WSSC supplies water to a total of 1.3 million people in Montgomery and Prince George's Counties in Maryland. WSSC obtains its water exclusively from two surface water intakes located approximately (b) (9) [redacted] from the site and in a

different drainage basin from the site. The City of Rockville supplies only the city with potable water exclusively from one surface water intake approximately (b) (9) from site; also with a different drainage basin from the site area. Rockville serves approximately 40,000 people.

Approximately 1545 persons living within four miles of the site rely upon private wells. This estimate is based upon USGS topographic mapping of the area and MDE/DRS well logs. A Montgomery County average of 2.7 persons per household is used.[18]

The nearest domestic well is located approximately (b) (9) [redacted][9] This well has a depth of 125 feet with a casing of 40 feet.

5.2 SURFACE WATER USES

A storm drain collects runoff from the site, which is covered with asphalt, approximately 300 feet northwest of the building. Runoff flows through the storm drain northwest underground for approximately 700 feet and empties into a regional storm water pond across New Dover Rd.(Figure 3). This surface water impoundment is approximately 1/4 acre in size and lies about 20 feet below the road surface.

Water flows from the pond into a storm drain located north of

the pond and empties into an intermittent stream 2,000 feet north of the site, after crossing under Gude Rd. Approximately 3200 feet from the site this intermittent stream flows into an unnamed perennial stream, which is the ppe.[19] The flow rate of this stream is estimated to be less than 10 cfs at this juncture. This stream is considered a fishery.

The drainage from this perennial stream flows east and approximately 0.70 stream miles from ppe empties into Rock Creek. Rock Creek is considered to be a fishery for sustenance and recreational purposes. At the juncture of Rock Creek and the perennial stream the flow rate is estimated to be 10-100 cfs.

Rock Creek continues to flow south through Rock Creek Regional Park, a Montgomery County owned park used mainly for recreational purposes. Approximately 15 stream miles south from the ppe, Rock Creek crosses the Montgomery County, Washington DC boundary and eventually empties into the Potomac River. Rock Creek is used for fishing, swimming, and other recreational activities.

The unnamed perennial stream is classified as a Palustrine Wetland stream. Rock creek is classified as Palustrine and Riverine Wetlands.[19] The total frontage along the 15 mile surface water migration route downstream from ppe is estimated to be 20.5 miles. The distribution of these frontages along the surface water migration route is summarized in the table below.[19]

From	To	Wetland Frontage (Miles)	Approximate flow rate of the contiguous stream (cfs)
Perennial Stream	Rock Creek	0.70 mile	<10
Rock Creek	Washington DC boundary	19.8 mile	10-100

5.3 NEARBY POPULATION

There are no residences within 200 feet from site (Figure 3). There are 26 employees working at the active site. There are no schools or day care centers within 200 feet of site. The site is located in an industrial park surrounded by warehouses and office buildings.

Approximately 283,386 persons live within four miles of the site. This population estimation is based upon the 1990 census and the Maryland topographic maps.[16&17] The majority of the area in the vicinity was designated with urban shading, which made the usual method, based upon a county-averaged person per dwelling, imposible to apply. Therefore, the population density was estimated using the 1990 census, and this urban density was used to estimate the distribution of persons within four miles of the site.

	Area sq mi	Population persons	
0 - 1/4	0.20	54	
1/4 - 1/2	0.59	5301	
1/2 - 1	2.36	14137	
1 - 2	9.42	70686	
2 - 3	15.71	94248	
3 - 4	21.99	98960	
Total		283386	

The nearest residence is approximately (b) (6) [redacted]. The nearest wetland from the site is the perennial unnamed stream which is 3200 feet north of the site. The total wetland acreage within 1/2 mile of the site is less than one acre.[19]

6.0 SITE VISIT

6.1 PERSONS CONTACTED

Proto Circuits Inc.
Michael McGolrick
14674 I Southlawn Lane
Rockville, Maryland 20850
Telephone (301) 762-8227

On September 27, 1991 three members of MDE/HSWMA, Singh Harpreet from RCRA, Rick Grills and Jim Freeman from Site Assessment, conducted a site visit. The company was in full operation and the manager, Michael McGolrick, explained the operation and allowed MDE personnel to tour the facility.

The building is separated into nine different bays with Bay I being the office. The other bays are utilized for the electroplating operation (Figure 4).

Based on the facilities inspection it was found that a wastestream is generated consisting of the electroplating sludge from the pre-treatment system, designated as F006. This consists of copper hydroxide, nickel hydroxide, calcium hydroxide, and diatomaceous earth. Spent potassium permanganate solution D002 is used in the electroles copper lines. This chemical is used to remove epoxy from the holes of circuit boards. Spent acidic and alkaline cleaners is treated in the facilities pre-treatment system. The hazardous sludge is manifested out to a certified hauler and then to a permitted facility. Discharges of the pre-

treated effluent go to WSSC's subject facility. Proto Circuits Inc. monitors the wastewater before it is discharged into WSSC's sewer lines. Proto Circuit's discharge permit number from WSSC is 00470.

The runoff from the electroplating room Bay C, flows to the adjacent room, Bay D, which is the pre-treatment room. All the floors are constructed of concrete and all the walls are constructed of cement blocks. The roof is constructed of a heavy gauge steel. The floors are sloped to runoff to drains leading to the pre-treatment system.

The outside runoff flows into sewer drains in front of the site building belonging to WSSC. The rear runoff flows into storm drains approximately 300 feet northwest of the site and eventually into a regional water pond 700 feet north of ppe.

During the site visit there were numerous live mallards observed in the pond. There were no signs of stressed vegetaion observed along the surface water pathway.

7.0 CONCLUSIONS

On April 5, 1986 there was a fire in the electroplating room of Proto Circuits Inc. The fire was extinquished in approximately 30 minutes with the firefighters using only water. In the fire incident, eight 30 gallon tank containers were melted down, spilling their contents on the concrete floor. The contents of the tanks were one 30 gallon tank of Ronocat Pre-Activator with a constituent of Glycols and Sodium Hydroxide; one 30 gallon tank of Ronocat Neutralizer Salt (which is used to strip the blue layer of the pc boards; constituents are a trade secret). The other six 30 gallon tanks contained only water and were used for rinsing.

An inspection of the facility at the time of the fire revealed one inch of blue/green liquid on the floor. Most of the liquid went into the facilities pre-treatment system, but some runoff flowed into the sewer drains in front of the building. The sewer lines belong to WSSC and presumably went into their pre-treatment system. It is assumed that some runoff from the fire fighting went into the storm drains, located approximatley 300 feet northwest of the site building, although records show that most of the liquid was contained inside the building.

The facility did their own cleaning by placing the liquid into empty tank containers and treating the liquid in their pre-treatment system. The initial clean-up time frame took two weeks.

All spent solvents, treatment components, and sludge generated by this operation are manifested out as waste with the exception of silver, which is separated out by a Rolex silver recovery unit. Hazardoous waste is manifested out through: SCA Services, Rt 1, Box 255, Pinewood, South Carolina 29125, E.P.A. # SCD 070375985. Proto Circuits Inc. pre-treats and monitors their wastewater before discharging into WSSC's system. Their permit number is 00470.

REFERENCES

8.0 REFERENCES

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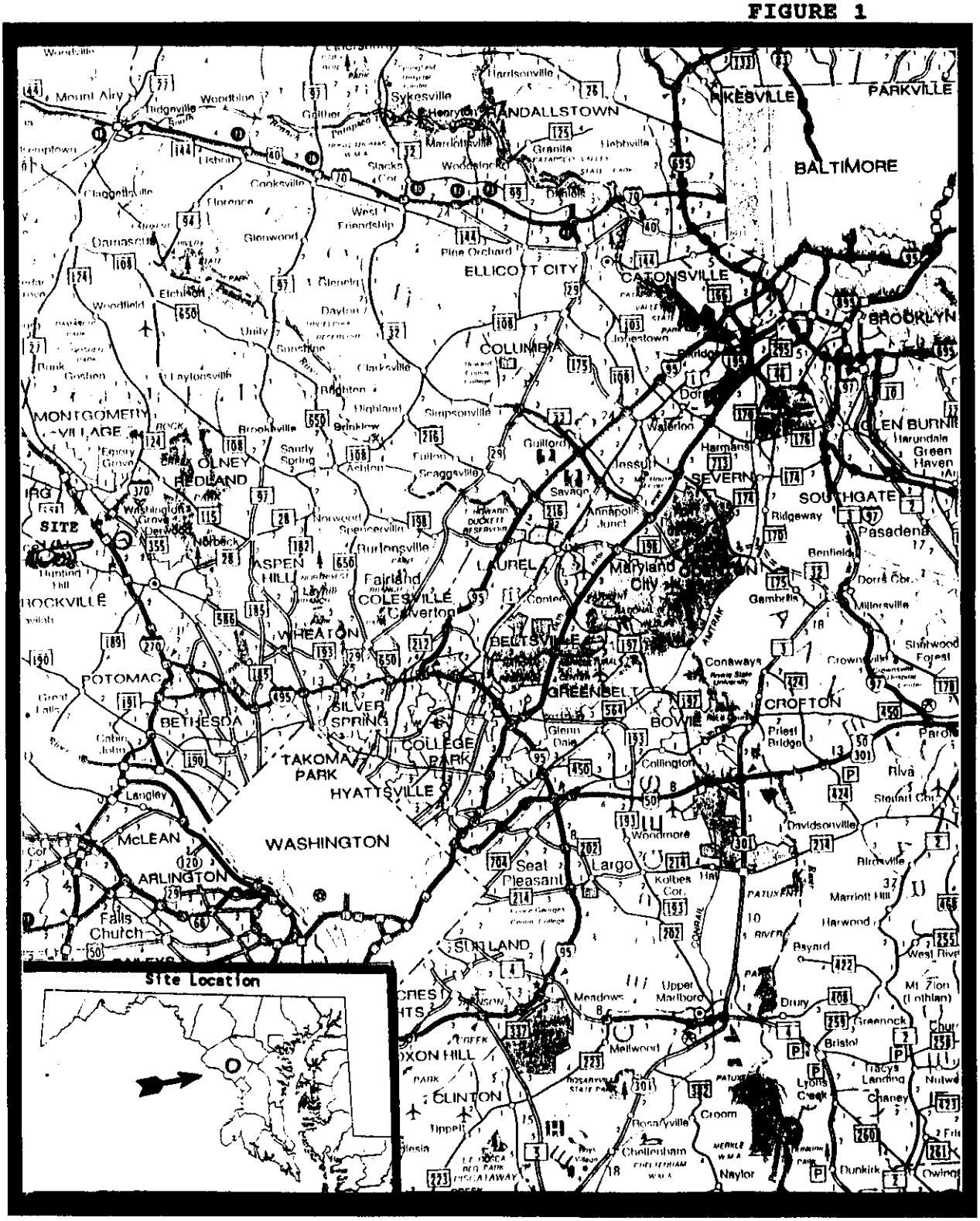
19. Nontidal Wetlands Guidance Maps, State of Maryland, Department of Natural Resources, Rockville and Kensington Quadrangles, 1989.

FIGURES

REGIONAL HIGHWAY MAP

FIGURE 1



SCALE

0 6 12 MILES

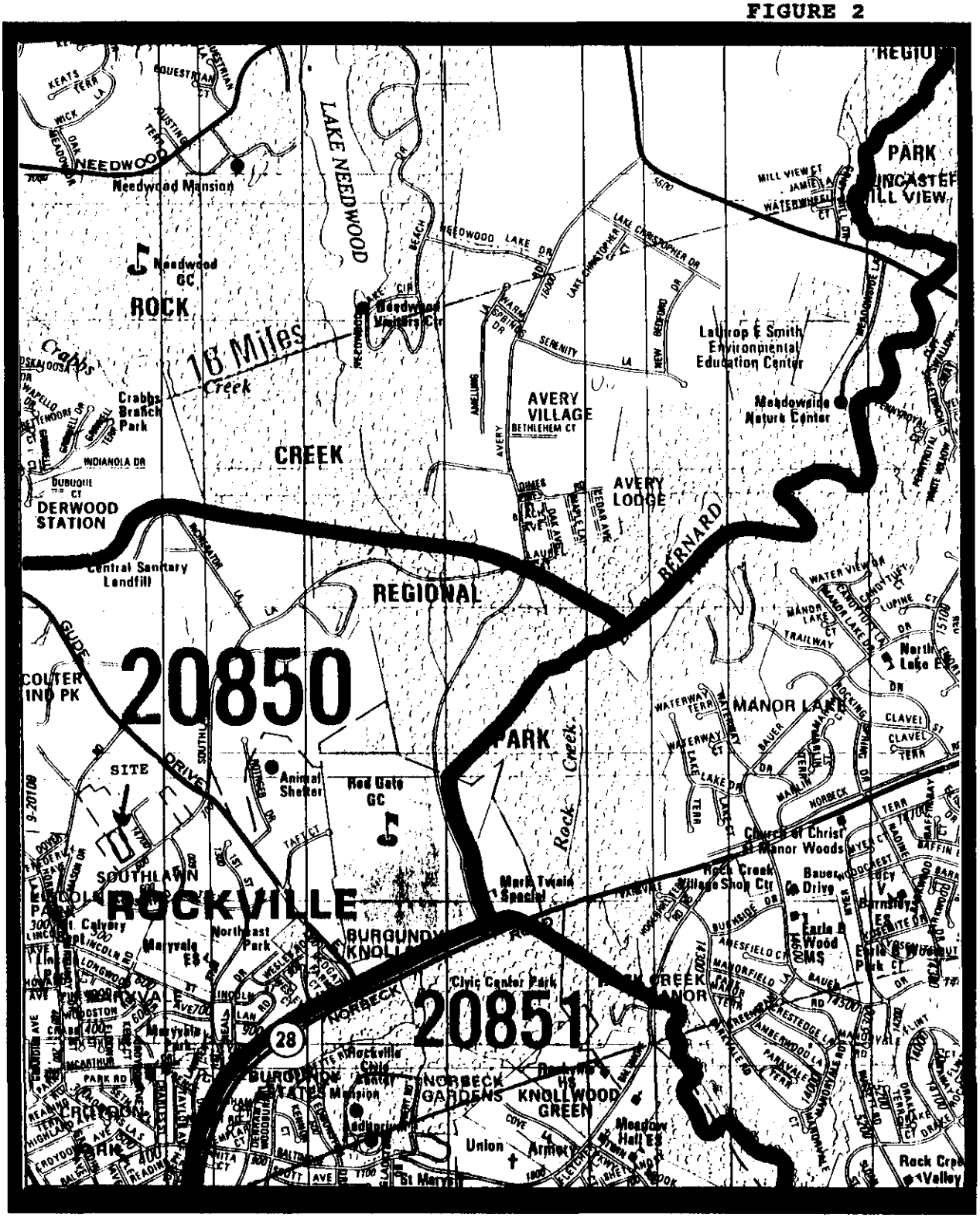
0 10 20 KILOMETERS

N

State Highway Administration, 1990

LOCAL STREET MAP

FIGURE 2



SCALE

0 6 12 MILES

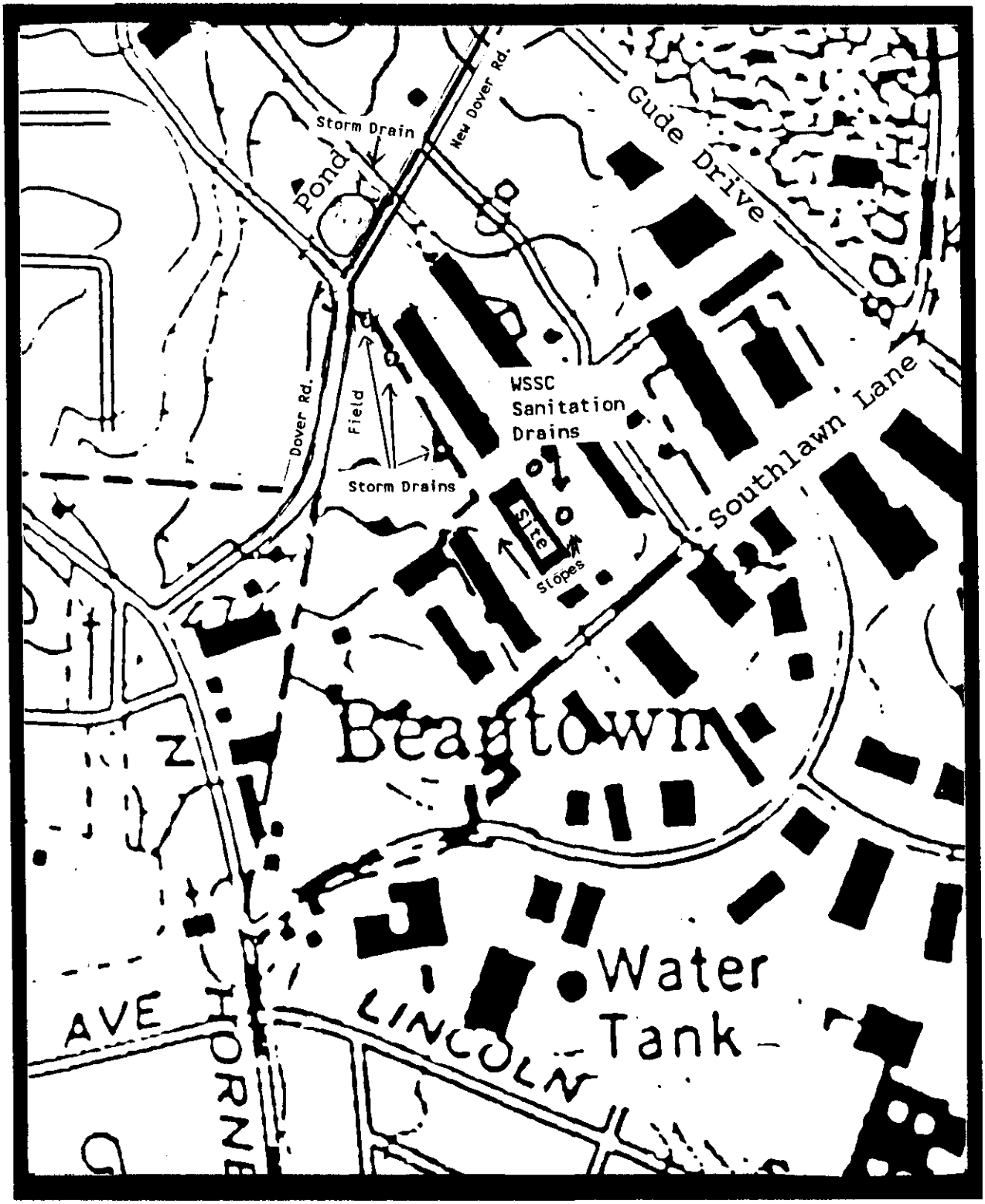
0 10 20 KILOMETERS

N

State Highway Administration, 1990

SITE LAYOUT

FIGURE 3

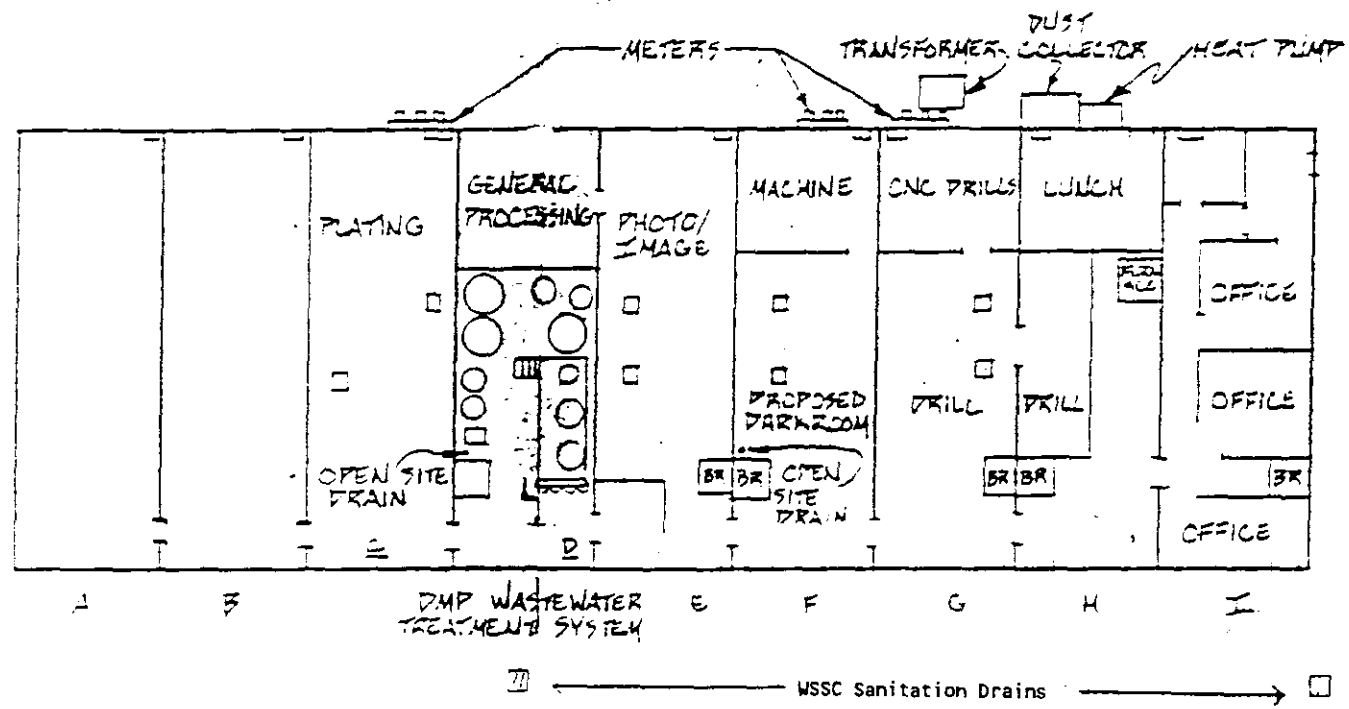


NOT TO SCALE

North

LANT LAYOUT

FIGURE 4



LOCAL TOPOGRAPHY AND SURFACE WATER

FIGURE 5

GEOLOGIC MAP

FIGURE 6

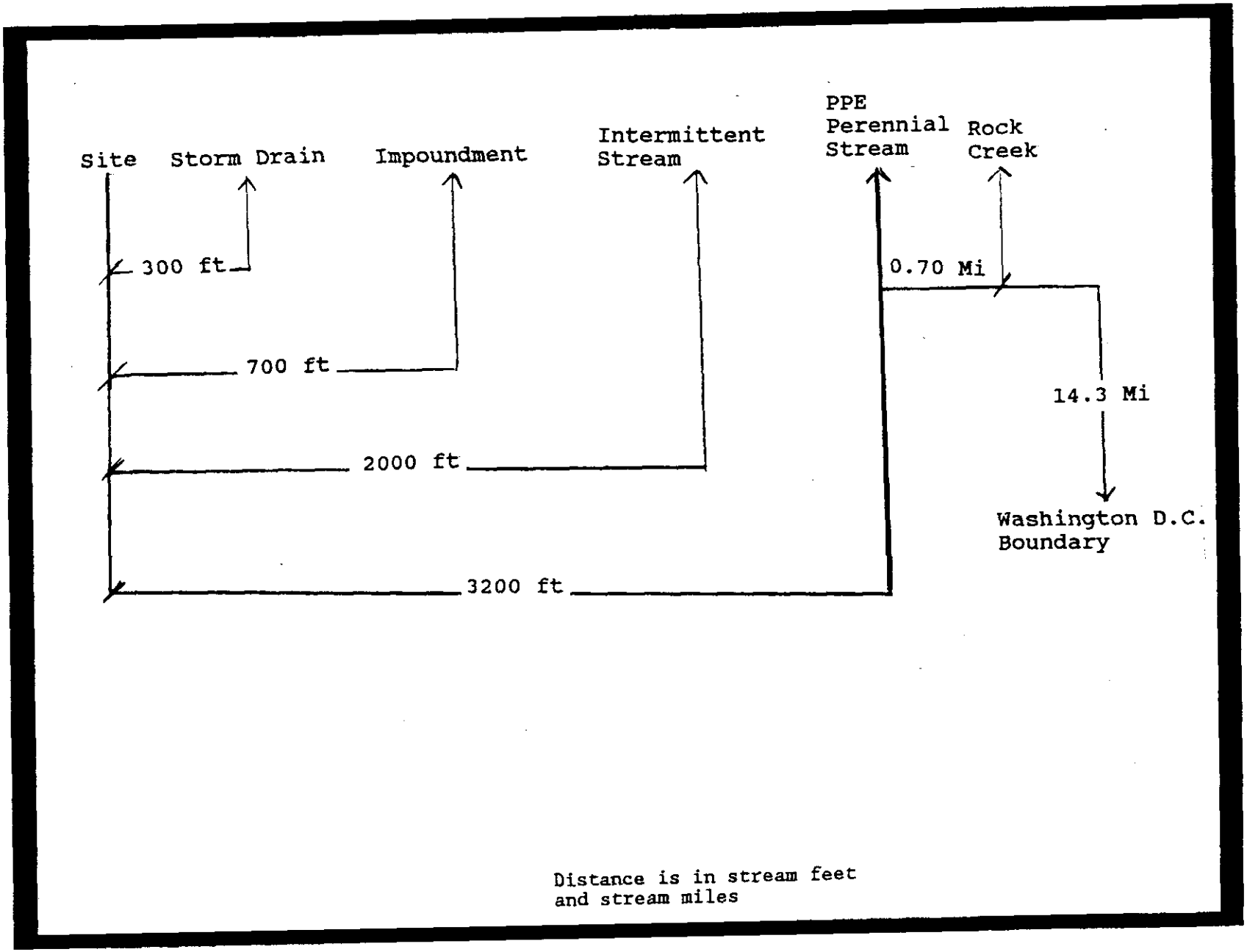
LEGEND:

Qal - Alluvium
Was - Wissahickon Formation
Waso- Wissahickon Formation (Oligoclase - Mica Facies)
Sf - Sykesville Formation
Gb - Bear Island Granodiorite
gk - Kensington Granite Gneiss
t - Tonalite with inclusions (Basic Igneous Rocks)
b - Undifferentiated Basic Rocks

N

SURFACE WATER MIGRATION ROUTE SKETCH

Figure 7



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REPORT OR DOCUMENT TITLE PRELIMINARY ASSESSMENT REPORT

DATE OF DOCUMENT 1-FEB-1992

DESCRIPTION OF IMAGERY PHOTO LOG

NUMBER AND TYPE OF IMAGERY ITEM(S) 1 PHOTO LOG

APPENDIX

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

7-0090

MATERIAL SAFETY DATA SHEET

ELECTROLESS COPPER

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Ronacat, Inc	
ADDRESS (Number, Street, City, State, and ZIP Code) 272 Buffalo Avenue, Freeport, NY 11520	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS Ronacat Preactivator
CHEMICAL FAMILY Glycols	FORMULA

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	0		BASE METAL	0	
CATALYST	0		ALLOYS	0	
VEHICLE	0		METALLIC COATINGS	0	
SOLVENTS	0		FILLER METAL PLUS COATING OR CORE FLUX	0	
ADDITIVES	0		OTHERS	0	
OTHERS	0				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	428°F	SPECIFIC GRAVITY (H_2O=1)	0.970
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Complete		
APPEARANCE AND ODOR	Pale Yellow Solution		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
Non-Flammable	Over 212°F		
EXTINGUISHING MEDIA: Not Applicable			
SPECIAL FIRE FIGHTING PROCEDURES: N.A.			
UNUSUAL FIRE AND EXPLOSION HAZARDS: N.A.			

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

HOLD LIMIT VALUE: Not Known

TS OF OVEREXPOSURE:

May cause skin and eye irritation

GENCY AND FIRST AID PROCEDURES:

Wash off with water and dilute solution of

Bicarbonate of soda

SECTION VI - REACTIVITY DATA

ILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

MPATABILITY (Materials to avoid): Oxidizing Materials

ZARDOUS DECOMPOSITION PRODUCTS:

ZARDOUS YMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

PS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Wash to Drain with water

STE DISPOSAL METHOD:

Neutralizer with dilute acid and discharge to drain

SECTION VIII - SPECIAL PROTECTION INFORMATION

SPIRATORY PROTECTION (Specify type):

NTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER

OTECTIVE GLOVES: Yes	EYE PROTECTION: Yes

HER PROTECTIVE EQUIPMENT:

SECTION IX - SPECIAL PRECAUTIONS

ECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Keep in cool area

HER PRECAUTIONS:

MATERIAL SAFETY DATA SHEET

ELECTROLESS COPPER

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Enthone	516-868-8800
ADDRESS (Number, Street, City, State, and ZIP Code) 272 Buffalo Avenue Freeport, NY 11520	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS RONACAT MULTILAYER ACTIVATOR
CHEMICAL FAMILY	FORMULA

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	0		BASE METAL	0	
CATALYST	0		ALLOYS	0	
VEHICLE	0		METALLIC COATINGS	0	
SOLVENTS	0		FILLER METAL PLUS COATING OR CORE FLUX	0	
ADDITIVES	0		OTHERS	0	
OTHERS	0				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	--------	SPECIFIC GRAVITY (H_2O=1)	1.047
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Complete		
APPEARANCE AND ODOR	Pale yellow liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
NA			
EXTINGUISHING MEDIA	Not applicable		
SPECIAL FIRE FIGHTING PROCEDURES	Not applicable		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Not applicable		

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: Not established

EFFECTS OF OVEREXPOSURE
May cause skin and eye irritation or burns upon contact.

EMERGENCY AND FIRST AID PROCEDURES
Wash contact area with copious amounts of water for at least 15 minutes.

Eye-contact: Flush with large volumes of water for at least 15 lminutes and obtain medical advice.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*: Acids

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Neutralize area with acid and flush with water.

WASTE DISPOSAL METHOD

Dispose according to federal, state and local regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES: Rubber gloves

EYE PROTECTION: Safety goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

TechSpecs

LeaRonal

272 Buffalo Avenue. Freeport. NY 11520. (516) 868-880
642 West Nicolas Ave. Orange, CA 92668 (714) 771-562
1717 Armitage Court. Addison. IL 60101. (312) 620-750
International Offices England. Switzerland. Japan. France. West Germany. Italy Hong Kon

TechSpec No. 80322 (BII)

Date 11/8/84

Supersedes 12/7/81

RONACAT PREACTIVATOR

Ronacat Preactivator solution is designed to be used with Ronacat Resin Remover solution to remove smear from thru-hole multi-layer printed circuit boards. The solution is free of hazardous chromic or concentrated acids.

Equipment

Tanks	Polypropylene
Heaters	Teflon - Quartz
Agitation	Work movement

Solution Makeup

Deionized Water	50% by volume	17.5 gal	4.5
Ronacat Preactivator	50% by volume	17.5 gal	

Operating Conditions

Temperature	120 - 140°F
Time	3 - 5 minutes
Agitation	Move work gently to produce uniform flow of solution through holes.
Caustic	Maintain free sodium hydroxide at 3 - 6 g/l.

Caustic Analysis

1. Pipette 50 ml of the bath into a 250 ml beaker and cool to room temperature.
2. Using a pH meter previously standardized to pH 10, titrate with 0.5N hydrochloric acid to a pH of 10.5.

Calculation: Free sodium hydroxide g/l = mls of HCL x Normality x 0.8

Replenishment 100-120 ml/l mean F 1 g/l

State of Maryland
Department of the Environment
Hazardous and Solid Waste Management Administration
2500 Broening Highway, Baltimore, Maryland 21224

Sequence #_____

Report of Observations

Type of Inspection/Observations: RCRA Date 09/27/91

Facility Name: Proto Circuits, Inc

Remarks: processes are used on boards:-
- Gold/Nickel plating
- Solder mask
- Silkscreen and
- Black oxide coating that is applied only to multilayer boards.

Waste Streams:-

Based on the facility inspection and review of the subject facility's files it was found that the following waste streams are generated at the subject facility:-
- Sludge from the Dehydrating Machine (located in 14674 (Bay G)):- The rinse from an automatic sand machine is filtered through the bag and cartridge filters. The effluate is discharged to the subject facility's pretreatment system. The sludge from the filters is removed as CHS by a certified CHS hauler to a permitted facility
- Electroplating sludge from the Pre-treatment system:- said waste stream is designated as F006 and consists of Copper Hydroxide, Nickel Hydroxide, Calcium Hydroxide and Diatomaceous Earth. As per Mr McGolrick, the production manager of Proto Circuits, Inc.

Observer: Harpreet Kalsi Person Interviewed: Michael McGolrick

MDE 111
REV 1/11/88

Sequence #_____

State of Maryland
Department of the Environment
Hazardous and Solid Waste Management Administration
2500 Broening Highway, Baltimore, Maryland 21224

Report of Observations

Type of Inspection/Observations: RCRA Date 09/21/91

Facility Name: Proto Circuits, Inc.

Remarks: the subject facility's pre-treatment system.

Spent monoethanolamine ethylene diamine resist stripper (D008):- Said stripper is used to strip the blue layer off of the PC Boards. The subject wastestream is ~~used~~ treated in the pre-treatment system.

Spent Tin/Lead alloy stripper:- Said alloy stripper specifically removes the Tin/Lead. Said wastestream is designated as D002, D008, and treated in the subject facility's pre-treatment system.

Spent "Copper Clean II" solution:- It is a Ferric Chloride based cleaner and used to remove finger prints from the P.C. boards. Said wastestream is treated in the subject facility's wastestream.

Spent sodium persulfate copper etchant (D002):- Said chemical is an etchant, classified as micro-etchant and treated in the subject facility's pre-treatment system.

Spent methanesulfonic acid solution:- Said acid solution is used in Tin/Lead plating. Spent methanesulfonic acid solution is batch fed to the subject facility's pre-treatment system.

Observer: Harpreet K. Singh Person Interviewed: Michael McDonald

MDE 111
REV 1/11/88

State of Maryland
Department of the Environment
Hazardous and Solid Waste Management Administration
2500 Broening Highway, Baltimore, Maryland 21224

Sequence # 0

Report of Observations

Type of Inspection/Observations: RCRA Date 09/21/91

Facility Name: Proto Circuits, Inc.

Remarks: Spent "Brown Oxide" solution (D002):— Brown Oxide solution deposits (from oxide cycle) a needle structure on the board. Said spent solution is treated in the subject facility's pretreatment system.

Air Filter Dust:— There is one air filtering machine outdoor that filters the air near the Drilling and Routing department. The dust from the filters is captured in 55 gallon drums. Said dust is placed (sent to Safety Metals for metal recovery) in the trash for disposal.

Empty Drums:— The generic chemical drums that have a deposit are returned to the manufacturer for re-filling. Some drums are cut into pieces and placed in the trash receptacle.

Metal scrap: Said wastestream is removed from the subject facility's Mont. Scrap that for metal recycling.

In the nutshell, the following wastestreams are discharged to the subject facility's pretreatment system:—

Total rinse water from all processes
Rinse water from Bay B
Solder Stripper from Bay B.
The rinsate from the Deburring machine (located in Bay G)
Copper clean II from Bay B, and C)
Sodium persulfate from Bay C

Observer: Harpreet K. Singh Person Interviewed: Michael E. Dolnick

MDE 111
REV 1/11/88

State of Maryland
Department of the Environment
Hazardous and Solid Waste Management Administration
2500 Broening Highway, Baltimore, Maryland 21224

Report of Observations

Type of Inspection/Observations: RCRA Date 09/27/91

Facility Name: Photo Circuits, Inc.

Remarks: Pre-solder dip from Bay C.
Electrolytic nickel from Bay C
Black oxide solution from Bay B
Alkaline resist stripper from Bay B
Solder brightener from Bay B
Precleaner from Bay B
Resin remover from Bay C
Neutralizer from Bay C
Alkaline Cleaner from Bay C
Sodium persulfate from Bay C and B
Sulfuric acid from Bay C and B.
Multilayer activator from Bay C
Copper catalyst from Bay C
Stripper from Bay C.
Developer from Bay E
Fixer from Bay E
Electroless Copper from Bay C.
Sodium peroxide from Bay D and
Sodium carbonate monohydrate
from Bay E.

Approx. 8100 gallon per day of water is used in rinsing and the make up of process solutions. Said water is provided by the municipal water system of the City of Rockville.

Discharges of pre-treated effluent is to the WSSC sanitary sewer. The subject facility's WSSC discharge permit is 00470.

Observer: Herbert F. Sing Person Interviewed: Richard E. McBride

MDE 111
REV 1/11/88

State of Maryland
Department of the Environment
Hazardous and Solid Waste Management Administration
2500 Broening Highway, Baltimore, Maryland 21224

Sequence #_____

Report of Observations

Type of Inspection/Observations: RCRA Date 09/27/91

Facility Name: Proto Circuits, Inc.

Remarks: said wastestream is removed by Delvecchio Trans and Mat. a certified CHS hauler to WRC Processing Company in PA through the manifest system.

D002, D008 etchant :- Said etchant is used in ~~Tin~~ Tin/Lead plating. The subject wastestream is removed from Proto Circuits, Inc. ~~to~~ by Photo Chemical Systems to GP Chemica in SC through the manifest system.

Spent Precleaner solution:- Hydrochloric acid is used to remove oxides from the Tin/Lead surface. Said wastestream is treated in the subject facility's Pre-treatment system.

Spent photographic fixer solution (D011):- Said wastestream is treated in the subject facility's pretreatment system.

Spent photographic developer solution (D011 Subject wastestream is treated in the subject facility's pre-treatme system.

Spent potassium permanganate solution (D002):- Potassium permanganate is used in the Electroless Copper line. Said chemical is used to remove epoxy resin smear from the holes of PC boards.

Spent acidic and alkaline cleaners:- Said wastestream is treated in

Observer: Margaret Krueger Person Interviewed: Michael McShink

MDE 111
REV 1/11/88

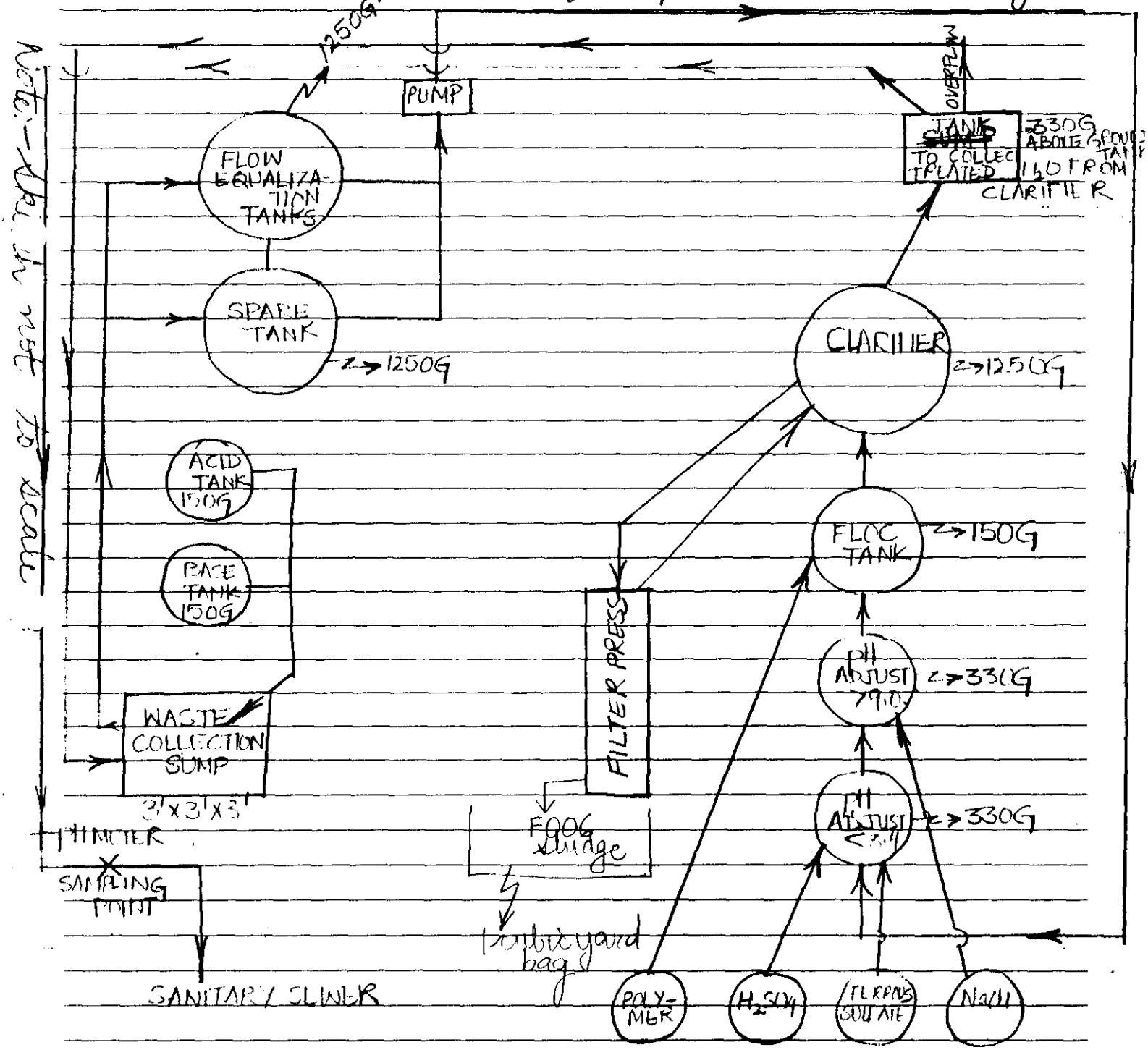
State of Maryland
Department of the Environment
Hazardous and Solid Waste Management Administration
2500 Broening Highway, Baltimore, Maryland 21224

Report of Observations

Type of Inspection/Observations: RCRA Date 09/27/91

Facility Name: Proto Circuits, Inc.

Remarks: Floor plan of pre-treatment system



Observer: Harpreet K. Singh Person Interviewed: Michael E. McDaniel

MDE 111
REV 1/11/88

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DATE OF DOCUMENT 1-FEB-92

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